Somatostatinoma

Somatostatinoma is a pancreatic neuroendocrine tumor (PanNET) that originates from delta cells. It can present with steatorrhea, gallstones, and hyperglycemia. Increased levels of somatostatin in the blood is virtually diagnostic of this tumor. Abdominal CT or MRI can help with localizing the disease and evaluating for metastasis. Octreotide helps to relieve symptoms. Treatment options include surgical resection and chemotherapy.

PLAY PICMONIC

Characteristics

Pancreatic Neuroendocrine Tumor

Pancreas Neuron-indy-car Tumor-guy

Somatostatinoma is a functional pancreatic neuroendocrine tumor (PanNET). Other tumors of this class include insulinomas, gastrinomas, VIPomas, and glucagonomas. Somatostatinomas are relatively rare and make up less than 5% of PanNETs.

Originates from Delta Cells

Delta-triangle

Somatostatin is mainly produced by pancreatic delta cells. It reduces the production of other hormones including gastrin, secretin, cholecystokinin, glucagon, and insulin. Somatostatin is also produced by the hypothalamus where it inhibits growth hormone secretion.

Clinical Features

Steatorrhea

Steak-diarrhea

Steatorrhea is characterized by excessive fat in the stool. This occurs due to mechanical compression of biliary and pancreatic duct drainage by a somatostatinoma. Decreased gastrointestinal motility also plays a role in this process. The result is a malfunction of the pancreas presenting as fat malabsorption. Fat then deposits in the stool.

Gallstones

Gold-stones

Somatostatin suppresses cholecystokinin, resulting in decreased motility of the gallbladder. This will increase the risk of gallbladder stone formation.

Hyperglycemia

Hiker-glue-bottle

Hyperglycemia or hypoglycemia can be seen in patients with somatostatinomas. This occurs due to the suppression of insulin and glucagon. Notably, somatostatin suppresses insulin more than glucagon. Thus, hyperglycemia will dominate. Another clinical feature that can be seen is hypochlorhydria. The decrease of gastrin production by somatostatin causes hypochlorhydria.

Diagnosis

Increased Somatostatin

Up-arrow Sumo-santa

Increased somatostatin levels are virtually diagnostic of somatostatinoma.

Abdominal CT or MRI

Cat-scanner and M-R-eyes Machine on Abdomen

Abdominal CT or MRI can help visualize the tumor. The initial diagnostic tool to be considered is multiphasic contrast-enhanced CT of the abdomen. MRI helps to recognize small liver metastasis.

Management

Octreotide

Octo-tree-ride

Octreotide is a somatostatin analog. Its indication seems paradoxical because of the high somatostatin levels seen in these patients. However, octreotide has proven to be effective at relieving patient's symptoms and reducing plasma levels of somatostatin.

Surgical Resection

Surgeon

Surgical resection is the only curative treatment. It is recommended and effective in patients with localized cases. Because some cases are complicated by advanced stage and metastasis, surgical cure is not possible.

Chemotherapy

Chemo-head-wrap

Chemotherapy can be considered in somatostatinoma patients. Fluorouracil is the most common chemotherapeutic agent used, and is often combined with other drugs such as streptozocin and doxorubicin. Half of cases benefit from chemotherapy.